

IBM Parallel Environment Developer Edition for AIX

Version 1.1.0

PTP Installation Guide

Introduction

IBM Parallel Environment Developer Edition is a complete state of the art integrated development environment based on the Eclipse workbench with additional open source and proprietary components for parallel application development.

PE Developer Edition includes Parallel Tools Platform (PTP) as one of its components.

PTP is a set of Eclipse plug-ins that provide an integrated Eclipse development environment where you can edit, compile, debug and run your HPC applications on your HPC cluster. PTP also provides tools to help with editing your source code and to analyze your source code from within the same Eclipse environment.

PE Developer Edition adds tools to view compiler transformation (optimization) reports, assists for programming in new models such as PAMI and visualization tools for use with the IBM High Performance Toolkit to the PTP installation images.

PTP packaging is comprised of two packages, Eclipse and PTP client software which runs on your local desktop or laptop system and PTP proxy software which runs on the login node or front end node of your HPC cluster.

Supported Software Levels

The PTP component of PE Developer Edition is supported on these software levels

- Eclipse and PTP client software
 - Red Hat 6 32 bit mode
 - Red Hat 6 64 bit mode
 - Microsoft Windows XP 32 bit mode
 - Microsoft Windows 7 32 bit mode
 - Apple Mac OS X 10.6 32 bit
 - Apple Mac OS X 10.6 64 bit
- PTP proxy software
 - AIX 7.1 service pack 3 or later

In order to run a parallel application interactively, you must have IBM Parallel Runtime Edition 1.1.0 or later installed on your HPC cluster. In order to submit batch jobs on your HPC cluster you must have Tivoli Workload Scheduler LoadLeveler 5.1 installed on your HPC cluster.

Media Contents

The installation media for PE Developer Edition contains installation images for the Parallel Tools Platform (PTP) client software IBM proprietary software described in the introduction as well as the installation image containing the required license files for PE Developer Edition installation. The installation images are:

Installation Image	Purpose
ppedev.loc.license	PE Developer Edition licensing
ppedev.ptp	Eclipse, PTP client software and IBM proprietary tools
ppedev.ptp.rte	PTP server (proxy) software

The ppedev.ptp installation image contains copies of the Java runtime required for a supported PTP installation on Microsoft Windows and Red Hat Linux desktop or laptop (client) systems as well as copies of Eclipse for each supported client platform and a copy of the PTP plug-ins and the IBM High Performance Computing Toolkit plugin for installation in an existing Eclipse 3.7.1 (Indigo SR1) installation.

PE Developer Edition does not provide a Java runtime for Mac systems. Any user using a Mac system should use the Java runtime provided with that system.

The ppedev.ptp.rte installation image contains proxies used by PTP to run parallel applications using IBM PE Runtime Edition and to submit batch jobs using LoadLeveler.

Space Planning

PE Developer Edition installs into the /opt/ibmhpc/ppedev.ptp directory.

The **ppedev.ptp** installation image contains copies of a complete Eclipse installation including PTP and the IBM HPC Toolkit plug-ins for each supported client platform and Java runtimes for each supported client platform. As a result, this installation requires approximately 1.5GB of space in the filesystem containing the /opt/ibmhpc/ppedev.ptp directory where PE Developer Edition is installed and approximately 1.5GB of temporary space to contain the installation image during the installation process.

You may, at your option, remove Eclipse images and Java runtimes not required for client platforms not supported at your site. However, if you do this, system installation and maintenance directories may report warnings due to missing files in the /opt/ibmhpc/ppedev.ptp directory.

The **ppedev.ptp.rte** installation image contains copies of the proxies used by the Eclipse client to run interactive parallel jobs and submit batch jobs and a copy of the Java runtime required by the PTP remote development support. This installation requires approximately 80MB of space in the /opt/ibmhpc/ppedev.ptp directory for the proxies and the compressed tar file containing the Java runtime.

Approximately 150MB is required for in a directory chosen by you for the Java runtime installation.

PTP Proxy Installation

The PTP proxy software must be installed on any login nodes or front end nodes in your HPC cluster where you expect your users to use to run parallel applications or submit batch jobs.

To prepare to install the proxies,

- Create a directory to store the installation images, for example, `~/images`.
- Copy the `ppedev.ptp.rte` install image to that directory.
- If you have not already accepted the PE Developer Edition license on this node, copy the `ppedev.loc.license` image installation image to this directory.

Once you have copied the installation images, you can install the proxies by invoking `installlp` from the command line or by using `smit`

Proxy Installation Using `installlp`

To install the `ppe.hpct.rte` installation image using `installlp` where the installation images are stored in `~/images`:

```
installlp -a -I -X -Y -d ~/images/ppedev.ptp.rte all
```

This command will accept the PE Developer Edition license (`-Y` flag) and expands the filesystem containing the installation directory `/opt/ibmhpc/ppedev.ptp` if required (`-X` flag)

Proxy Installation Using `smit`

To install the proxies using `smit`, follow these steps:

- Insert the distribution medium in the installation device, unless you are installing over a network.
- Enter **smit install_latest** This command invokes SMIT, and takes you directly to its window for installing software.
- Press **List**. A window opens listing the available INPUT devices and directories for software.
- Select the installation device or directory from the list of available INPUT devices. The window listing the available INPUT devices and directories closes and the original SMIT window indicates your selection.
- Press **Do** The SMIT window displays the default installation parameters.
- Type **ppedev.ptp.rte** in the **Software to install** field.
- After choosing the appropriate software, you might also want to change other options on the panel, as needed. For example, the panel also asks whether or not you want to expand the file systems.
- When you are prompted, answer yes to expand the file systems if you want to allow the filesystem to be expanded.
- Type **yes** in the **ACCEPT** new license agreements field. If the eLicense is not accepted, the proxies will not be installed.
- Press **Do**. The system installs the proxies.

Java Installation on Front End or Login Node

The remote development support in PE Developer Edition requires a copy of the Java runtime to be installed on the login nodes or front end nodes your users will use when running PE Developer Edition. For a supported PE Developer Installation you must either have the IBM Java runtime version 6.0.0 or later installed on your system or install the copy included with PE Developer Edition.

The copy of the Java runtime included with PE Developer Edition is located at `opt/ibmhpc/ppedev.ptp/jre/jre664redist.tar.gz`. You can install the Java runtime in any directory you choose that is accessible to your users.

To install the Java runtime, do the following:

- Copy the Java runtime compressed tar file to a temporary directory. For instance `cp /opt/ibmhpc/ppedev.ptp/jre/jre664redist.tar.gz ~/images/ jre664redist.tar.gz`
- `cd` to the temporary directory containing `jre664redist.tar.gz`
- Uncompress the Java runtime image using a gzip uncompression utility, for instance `gzip -d jre664redist.tar.gz`
- Create the directory that will contain the Java runtime if required. For instance `mkdir /usr/local/java_6.0.9`
- `cd` to the directory where you will unpack the Java runtime.
- Unpack the Java runtime. For instance `tar -xf ~/images/ jre664redist.tar`
- Ensure that the directory containing the `java` runtime executable, `/usr/local/java_6.0.9/jre/bin` in this example, is included in the default **PATH** used by your users.

PTP Client Installation

PTP client installation consists of three phases:

- Install client images on a cluster server node accessible to users.
- Download client images to users desktop or laptop machine.
- Install client software on user's desktop or laptop machine.

Server Node Installation

PTP client images must be installed on an AIX server node that is accessible to users. This may be any node at your site, including front end or login nodes for your HPC cluster.

Note that the PTP client images include Eclipse installation images for all supported platforms and the Java runtimes for all supported platforms except Apple Mac systems. As a result, the PTP client installation requires approximately 1.5GB of disk space.

To prepare to install the client images,

- Create a directory to store the installation images, for example, `~/images`. This directory must have approximately 1.5GB of free space.
- Copy the `ppedev.ptp` install image to that directory.
- If you have not already accepted the PE Developer Edition license on this node, copy the `ppedev.loc.license` image installation image to this directory.

Once you have copied the installation images, you can install the client images by invoking `installp` from the command line or by using `smit`

Client Image Installation Using installp

To install the ppe.hpct installation image using installp where the installation images are stored in ~/images:

```
installp -a -I -X -Y -d ~/images/ppedev.ptp all
```

This command will accept the PE Developer Edition license (-Y flag) and expands the filesystem containing the installation directory /opt/ibmhpc/ppedev.ptp if required (-X flag)

Client Image Installation Using smit

To install the client images using smit, follow these steps:

- Insert the distribution medium in the installation device, unless you are installing over a network.
- Enter **smit install_latest** This command invokes SMIT, and takes you directly to its window for installing software.
- Press **List**. A window opens listing the available INPUT devices and directories for software.
- Select the installation device or directory from the list of available INPUT devices. The window listing the available INPUT devices and directories closes and the original SMIT window indicates your selection.
- Press **Do** The SMIT window displays the default installation parameters.
- Type **ppedev.ptp** in the **Software to install** field.
- After choosing the appropriate software, you might also want to change other options on the panel, as needed. For example, the panel also asks whether or not you want to expand the file systems.
- When you are prompted, answer yes to expand the file systems if you want to allow the filesystem to be expanded.
- Type **yes** in the ACCEPT new license agreements field. If the eLicense is not accepted, the proxies will not be installed.
- Press **Do**. The system installs the client images.

Download Client Images to Client System

Users who want to install Eclipse must download the necessary installation images for their desktop or laptop client platform from the server where they were installed in the previous step. Installation images are provided for new installations on user's systems and for installation of PE Developer Edition plug-ins in an existing Eclipse 3.7.1 (Indigo SR1) installation.

Installation images are installed on the server node in the following locations

- Java 6.0.9 runtimes required for Red Hat 6 Linux and Microsoft Windows systems:
/opt/ibmhpc/ppedev.ptp/jre
- Eclipse installation images containing PE Developer Edition plug-ins
/opt/ibmhpc/ppedev.ptp/eclipse
- PE Developer Edition plug-ins: **/opt/ibmhpc/ppedev.ptp/plugins**

In order to download, users should create a directory (folder) with write permissions on their client system. Then they should connect to the server system using file transfer software such as **ftp** or **sftp**, **cd** to the directory containing the image they need, and then download the images they need as listed in the following table

Purpose	Image Name
Java runtime for Red Hat 6 32 bit Linux	ibm-java-i386-jre-6.0-9.0.i386.rpm
Java runtime for Red Hat 6 64 bit Linux	ibm-java-x86_64-jre-6.0-9.0.x86_64.rpm
Java runtime for Microsoft Windows XP 32 bit	ibm-java-jre-60-win-i386.exe
Java runtime for Microsoft Windows 7 32 bit	ibm-java-jre-60-win-i386.exe
Eclipse and plug-ins for Red Hat 6 32 bit Linux	ppedev-3.7-linux-gtk.tar.gz
Eclipse and plug-ins for Red Hat 6 64 bit Linux	ppedev-3.7-linux-gtk-x86_64.tar.gz
Eclipse and plug-ins for Microsoft Windows XP 32 bit	ppedev-3.7-win32.zip
Eclipse and plug-ins for Microsoft Windows 7 32 bit	ppedev-3.7-win32.zip
Eclipse and plug-ins for Mac OS X 32 bit	ppedev-3.7-macosx-cocoa.tar.gz
Eclipse and plug-ins for Mac OS X 64 bit	ppedev-3.7-macosx-cocoa-x86_64.tar.gz
PE Developer Edition plug-ins for existing Eclipse 3.7.1 installation	ppedev_update.zip

Installation on Client Systems

Once images have been downloaded to the user's system, the next step is to install the required software.

If the user's Red Hat 6 or Microsoft Windows system does not have the IBM Java runtime version 6.0.9 or later installed, the user must install the Java runtime provided with PE Developer Edition for a supported installation.

For Mac OS X users, no Java runtime is provided with PE Developer Edition, and users should use the Java runtime provided with their system.

If the user does not already have Eclipse 3.7.1 installed, they should install the Eclipse client software which includes PE Developer Edition plug-ins according to the table above.

If the user has an existing Eclipse 3.7.1 installation, they can install just the PE Developer Edition plug-ins. The Eclipse 3.7.1 installation must have CDT (C/C++ Development Tooling) 8.0.1 or later and RSE (Remote System Explorer) 3.3 installed.

Java Runtime Installation

Java runtime images for Linux are provided in RPM format. Installation of the Java runtime will require root user privilege. To install the Java runtime, **su** to root and issue the command **rpm -i <path to java runtime RPM>**, for instance **rpm -i ~/images/ibm-java-i386-jre-6.0-9.0.i386.rpm**. Alternatively, issue **sudo rpm -i <path to java runtime RPM>** without switching to root.

Java runtime images for Microsoft Windows are provided in a windows installer format. In order to install the Java runtime, you may require an account with administrator privileges. Install the Java runtime by just invoking **ibm-java-jre-60-win-i386.exe** and following the prompts in the installation dialog.

New Eclipse and Plug-ins Installation

Eclipse images are packaged as compressed tar files for Linux and Mac OS X systems and as zip files for Microsoft Windows systems. For all systems, Eclipse can be installed in a directory for use by all users on the system or can be installed in a directory only accessible by the user installing it. Multiple Eclipse instances can be installed on the same system in different locations.

If you are installing Eclipse into a publicly accessible directory, you will require root or system administrator privileges. If you are installing Eclipse into a user's private directory, then no privileges are required other than that the user has write access to that directory.

The first step is to create the directory where Eclipse will be installed if the directory does not already exist.

The next step is to unpack the Eclipse image into that directory. On Microsoft Windows and Mac OS X systems, use the archive tools available on your system to perform the installation.

For Linux systems, **su** to root if necessary then **cd** to the installation directory. Then Extract the Eclipse software using a command such as **tar -zxf <path to Eclipse installation tar file>**

PE Developer Plugin Only Installation

PE Developer Edition plug-ins can be installed into an existing Eclipse 3.7.1 installation. This installation can be a shared installation or can be a private copy for a single user.

For an Eclipse shared installation, the plug-ins can be installed for all users by logging in as root or obtaining administrator privileges before starting the installation process. Shared Eclipse installations and private Eclipse installations can be updated just for the user performing the install by not switching to the root user or obtaining administrator privileges before starting the installation process.

In order to install the PE Developer Edition plug-ins, do the following:

- Invoke the Eclipse 3.7.1 instance where you want to install the plug-ins.
- Click **help** in the Eclipse main menu bar.
- Click **Install new software** in the submenu to open the **Install** dialog.
- Click the **add** button in the **Install** dialog.
- Enter a name in the **Name** field of the **Add Repository** dialog, such as **PE Developer Edition 1.1** and click the **Archive** button.
- Navigate to the directory containing the **ppedev_update.zip** file and select that file.
- Click the **OK** button in the **Add Repository** dialog.
- A list of available plug-ins will appear in the **Install** dialog. Click the **Select All** button to install all plug-ins then click **Next**.
- Click **Next** in the **Install Details** dialog page.
- Review the license terms in the **Review Licenses** dialog page and click **I accept the terms of the license agreements** if you agree to the license terms then click **Finish**.
- The plugin installation will proceed. Once installation is complete you will be prompted to restart Eclipse.
- Click the **Restart Now** button. Eclipse will restart and the PE Developer Edition plug-ins will be installed.

Installation Completed

After successful completion of the above steps, PTP installation is complete. Refer to the online help documentation for assistance in using PTP and the other features in PE Developer Edition.